

Studebaker

SERVICE BULLETIN

AUGUST

NO. 254



1951

AUTOMATIC DRIVE LINKAGE ADJUSTMENT

Please record this article on page 36 of the Automatic Transmission Preliminary Shop Manual.

In cases of creeping or driving when the selector lever is in neutral position, in cars equipped with Studebaker Automatic Drive, it is important that the first test for cause be a complete check of the selector linkage adjustment. Make any adjustments necessary as outlined in the Automatic Drive Shop Manuals.

If the condition still exists, the selector linkage should be disconnected at the transmission and the transmission manually placed in the neutral position.

If, on running the engine the condition is then eliminated, it is apparent that the original cause was improper linkage adjustment, the selector linkage should be readjusted. It may be necessary to shorten or lengthen the hand control tube-to-bell crank rod. Proper setting of the bell crank-to-transmission rod should also be checked.

Should proper adjustment of the selector linkage fail to correct the condition, all pressure tests should be made to diagnose the cause and at that time a request for a replacement may be made. No request should ever be made for replacement under this condition until it is definitely determined that selector linkage adjustment is not the cause of the creeping or driving in neutral.

CHAMPION (10G) DISTRIBUTOR MODEL NUMBER

Please record this article on the Service Bulletin reference page at the end of the Electrical section of your 1951 Passenger Car Shop Manual.

On pages 1, 18, and 19 of the Electrical section of the 1951 Passenger Car Shop Manual where the Distributor Model No. "IAT-4001" is shown for the Champion (10G) models, this number should be crossed out and the correct number written in as follows: Auto-Lite Model IAT-4010.

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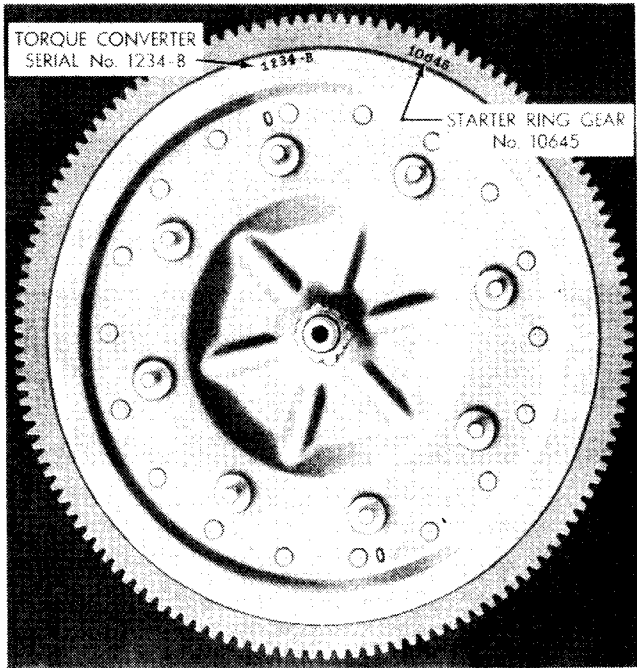
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TIGHTEN TRANSMISSION COMPANION FLANGE NUTS TO SPECIFICATION -- AUTOMATIC DRIVE

Please record this article on page 50 of your Automatic Transmission Preliminary Shop Manual.

Effective with Transmission Serial Nos. SC088025 (1951 Commander), SCH28393 (1951 Champion), and SCH28392 (1950 Commander) the 3/16" diameter steel ball on the transmission mainshaft assembly has been eliminated in production.

In the absence of this ball, the tightness of the transmission companion flange nut is depended upon to keep the rear sun gear thrust washers from rotating. It is especially important, therefore, that the companion flange nut be tightened to 60-80 ft. lbs. torque.



TORQUE CONVERTER SERIAL NUMBER LOCATION

Please record this article on page 50 of your Automatic Transmission Preliminary Shop Manual.

It is important that the correct serial number be given on all papers relative to the replacement of torque converters, so that the replaced torque converter can be identified when it is received in South Bend.

The torque converter serial number is located on the engine side (face) of the torque converter, between the hub and the inner edge of starter ring gear. Dealers are urged to make this clear to all employees handling any phase of Automatic Drive parts replacement requests.

Another number, "10645", is stamped directly on the starter ring gear itself. This is not the torque converter serial number although it has in some cases been erroneously taken as such, but is the stamping number of the starter ring gear.

VALVE NOISE DIAGNOSIS AND CORRECTION - COMMANDER V8 ENGINE

Please record this article on the Service Bulletin reference page at the end of the

Engine section of your 1951 Passenger Car Shop Manual. Letter No. 864, of which this article is a reprint, may now be discarded.

All poppet type valves become noisy when the actuating clearances become considerably greater than recommended specifications. Also, some noise can be expected during warm-up until all valve operating parts have reached operating temperature. This article, however, is concerned with so-called "noisy valves" in Commander (H) models when one or more valve clearance adjustments have failed to eliminate the noise; i.e., when it is not possible to adjust and maintain clearance because of abnormal conditions of the type described below.

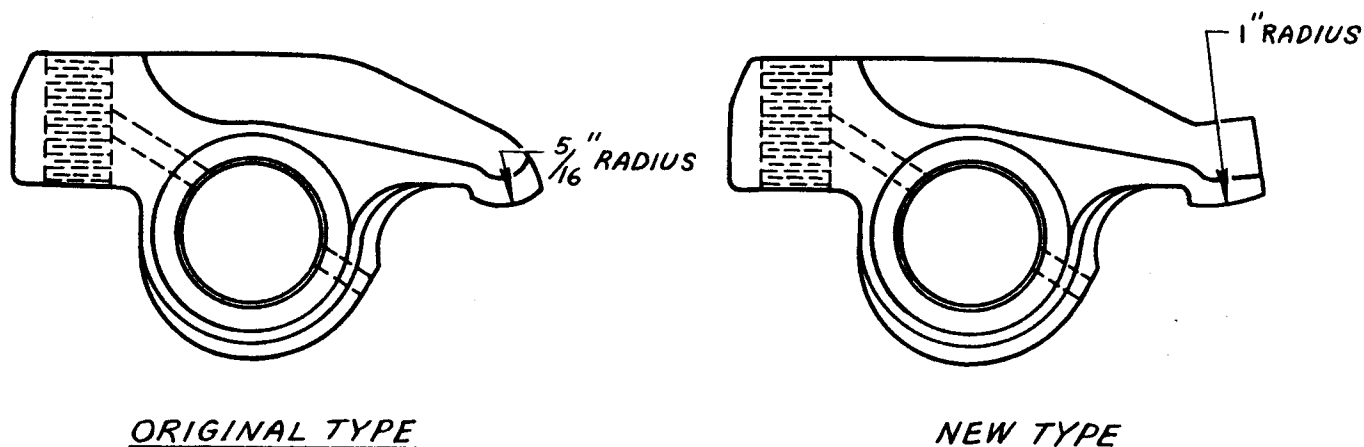
Individual Valves Noisy

If a condition is found in which only certain individual valves are noisy (will not maintain clearance adjustment), it will be necessary to remove the rocker arm cover and inspect the rocker arm adjusting screws and the mating tips of the push rods. It is possible on some cars to find rocker arm adjusting screws or the mating tips on push rods that were subject to abnormal and premature wear caused by improper heat treatment in manufacture. Replace worn adjusting screws with Part No. 529400, Rocker Arm Adjusting Screw, and replace push rods with abnormally worn tips with Part No. 527890, Valve Rocker Arm Push Rod.

If these parts are normal, then remove the valve lifter cover and inspect the valve lifters and camshaft cams for abnormal wear or scoring. Worn lifters should be replaced with new lifters, Part No. 531696 (Std.) or an oversize lifter, Part No. 531721 (.0005" oversize) or 531722 (.001" oversize), as necessary.

A worn lifter is often indicative of abnormal wear of the mating cam on the camshaft; therefore, whenever worn lifters are found, make a careful inspection of the cam. If abnormal wear of the cams is apparent, replace the camshaft, Part No. 527796, with one that has a red mark at the distributor drive end of the camshaft. All camshafts in parts depot stocks are now marked as explained. *Whenever a new camshaft is installed, a complete set of new lifters, Part No. 531696, should be installed.*

If the camshaft and valve lifters are replaced due to abnormal cam wear, it is especially important that the engine oil passages, crankcase, oil pan, Floto screen, and valve guide openings be carefully cleaned before the installation of the new parts to remove any metal particles that may be present.

ORIGINAL TYPENEW TYPE

Valve Noise - General

If the valve noise is general (not confined to just one or several valves) and frequent adjustment is necessary, remove the rocker arm assembly and inspect the rocker arms, the rocker arm shaft, and the valve stem ends carefully for unusual wear patterns. Abnormal wear of valve stem ends is usually seen as a definitely worn narrow groove. In such cases install the new type rocker arms described in the next paragraph and reface the valve stem ends as outlined below. Also inspect all valve operating parts and the cylinder heads carefully to be sure that all oil passages are open. If oil passages cannot be cleared, replace parts as necessary to assure proper lubrication of valve operating parts.

Changes in Rocker Arm Assembly

Effective with Engine No. V-37230 (VC-808 in Canada), the radius on the valve contact point of the rocker arm was increased from $5/16$ " to 1". This results in a much greater bearing area and reduces the possibility of excessive wear at the end of the valve stem. The new rocker arm, Part No. 529432, will be available through your parts depot. See accompanying drawing showing both original and new type rocker arm.

Refacing Valve Stem Ends

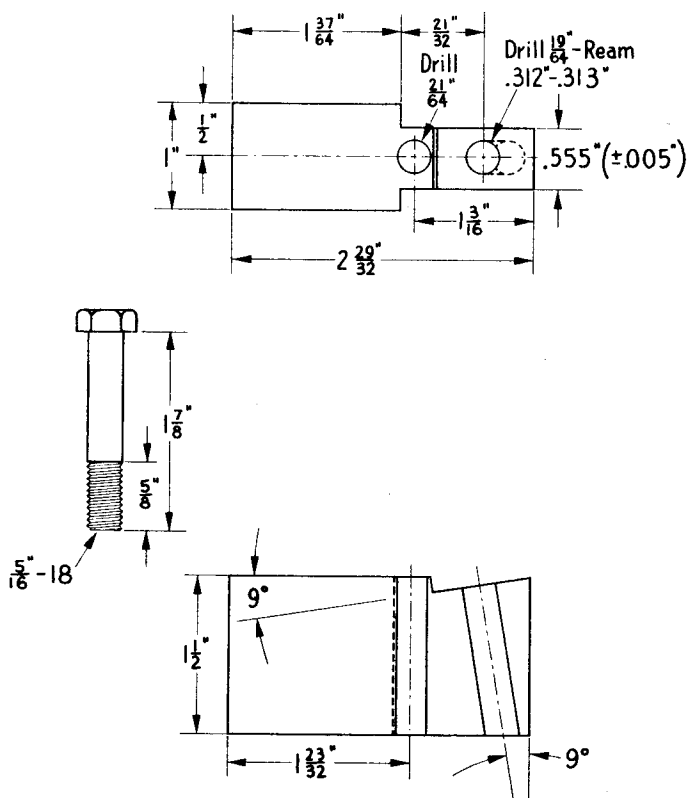
Badly worn valve stem ends should be refaced, using your valve seat grinder, a $2-1/4$ " stone, and the fixture described and illustrated below. Before having the fixture made, be sure you can obtain the $2-1/4$ " stone and that it can be used with your valve seating equipment

The fixture is made from $1-1/2 \times 1 \times 2-29/32$ " cold drawn steel. It can be made locally in any good machine shop in about two hours. Dimensions, drilling, and reaming are given in

the drawing. The fixture should be adapted to the particular model of valve seat grinder to be used.

The base of the fixture is designed so that it can be wedged between any pair of valve springs. The wedging action serves to push the springs apart, exerting pressure against the seats and seat retainers and thus forcing the valve stems tightly against the valve stem guides. When using the fixture, be sure this wedging action is effective; otherwise the refacing stone may chatter and a poor refacing job result.

The fixture should be firmly secured to the



cylinder head with the special screw shown in the drawing. Contact surfaces of the fixture, cylinder head, and valve springs should be clean and free of dirt. Valve spring dampers can be rotated if required so as not to interfere with the operation of the fixture and refacer.

CLIMATIZER THERMOSTAT CONTROL VALVE - 10G, H

Please record this article in the Service Bulletin reference space on page 2 of the Climatizer section of your 1951 Passenger Car Shop Manual.

In cases of erratic or complete lack of automatic heat control through the Climatizer, it is suggested that the procedure for checking the operation of the Climatizer given below be followed:

Move the temperature lever on the instrument panel to the warmest setting (full out position), then visually observe the valve to make sure that the valve cam is in its extreme counterclockwise position. In this position, the cam has a projection that will stop against the roller.

Move temperature lever to coolest setting; observe valve. Valve should be in extreme clockwise position, with projection on cam stopping against roller.

With the bowden wire adjusted to give both of the two extremes of travel, the valve will lock off manually in the coolest setting of the temperature control lever and will lock on manually in the warmest setting of the temperature control lever.

Valve Will Not Shut Off (Coldest Position)
Turn valve to the warmest setting and race the engine a few times to flush out foreign matter that may be holding valve open. If valve still does not shut off, replace the valve assembly.

Valve Will Not Open Completely (Warmest Position) With the valve in the extreme open position the full capacity of the heater is available. If the air coming into the car from the heater under this condition feels abnormally cool, check the condition of the cooling system (engine) thermostat. For maximum heat, a 180° F. engine thermostat and permanent antifreeze should be used. If, with the 180° F. thermostat and permanent antifreeze installed and the Climatizer control valve fully open, sufficient heat is still not obtainable, remove and test the Climatizer control valve as follows:

Since the valve is thermostatically actuated, it will be open at any cam position between the two extremes during very cold weather. It is necessary in testing the valve that it be warmed to at least 75° F.

With the cam in the wide open position and the valve warmed to at least 75° F., blow through one of the water tubes, observing that the air passes freely through the valve. Continuing to blow, gradually turn the cam to the cool setting. The air being blown through the valve should be correspondingly restricted. When the cam reaches the extreme clockwise (coolest) position of the cam, there should be no perceptible air flow.

If there is excessive air flow with the valve in the extreme clockwise position of the cam, turn the cam to the extreme counterclockwise (warmest) position and blow out the water tubes with compressed air. If valve continues not to shut off, replace the valve assembly. If the valve does shut off after blowing clean with compressed air, it can be considered in normal operating condition.

Noise From Heater Control Valve (1) If the valve chatters noticeably at certain temperatures, it is possibly caused by the valve being installed in an upside-down position. The engine water should enter the valve through the curved tube of the valve. Any other arrangement will result in chatter.

(2) A noise described as a combination of water gurgle and click of the valve mechanism is usually caused by low radiator water level or by a slight leak at the water pump seal or at the engine head gasket.

DRAINING AND FILLING PROCEDURES FOR OVERDRIVE TRANSMISSIONS

Please record this article on the Service Bulletin reference page at the end of the Transmission section of your 1951 Passenger Car Shop Manual and on page 221 of your 2R Series Trucks Shop Manual.

Lubrication servicemen are requested to fill overdrive transmissions through the main case fill hole and to fill the transmission slowly. While such an instruction seems simple enough, it is felt that many would welcome a further explanation and that knowing the reason for it will result in greater care in the performance of this operation.

DRAINING Transmission lubricant should be drained while it is as near operating temperature as possible to ensure good flow of the lubricant. Since the fill hole plugs must be removed to install new lubricant, they should be removed at the same time the transmission drain plugs are removed from the main case and

the overdrive case. Be sure to use proper size wrench in removing and replacing fill and drain hole plugs.

After all lubricant has drained, the drain hole plugs should be installed and tightened.

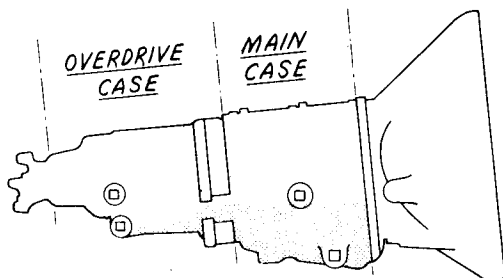
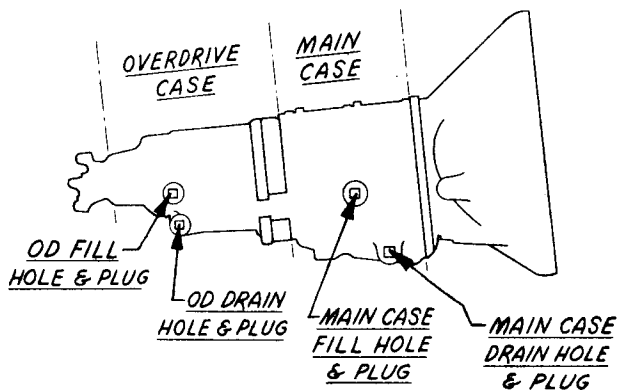
FILLING In Studebaker cars and trucks, the engine and transmission are on an angle in the frame, thus placing the rear end of the transmission below the front end. This puts the overdrive fill hole at a lower level than the fill hole of the main case.

Since the service man is in reality filling two cases through one hole, it is important that he allow ample time for the lubricant to flow from the main case to the overdrive housing. The accompanying drawing illustrates how too rapid filling can result in low lubricant level which in turn may result in damage to the transmission.

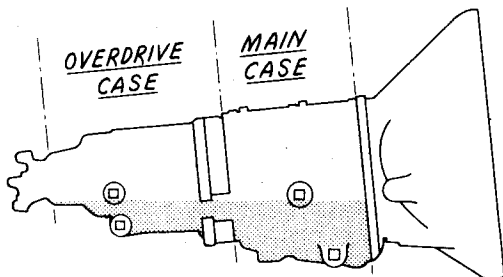
In order to determine when the overdrive case is filled to the proper level, lubricant should be flowed slowly into the main case fill hole. When the lubricant has reached the level of the overdrive case fill hole, this plug should immediately be installed. Then continue to add lubricant to the main case until the bottom of the main case fill hole is reached, at which time both cases will be filled to proper level and the main case fill hole plug should be installed.

NOTE.--The fill hole of the overdrive case is for purposes of determining lubricant level in the overdrive case only; do not use this hole for installing lubricant.

OVERDRIVE TRANSMISSION LUBRICANT RECOMMENDATIONS All Studebaker passenger cars and trucks: SAE 90 mineral oil gear lubricant or SAE 40 engine oil, both summer and winter.



TOO RAPID FILLING DOES NOT ALLOW ENOUGH TIME FOR LUBRICANT TO REACH PROPER LEVEL IN OD CASE WHEN MAIN CASE APPEARS TO BE FULL.



SLOW FILLING THROUGH MAIN CASE ALLOWS LUBRICANT TO REACH CORRECT LEVEL IN BOTH CASES.

TRANSMISSION CAPACITIES OF RECENT STUDEBAKER MODELS

MODEL	CONVENTIONAL			OVERDRIVE		
	U.S. PTS.	IMP. PTS.	LITERS	U.S. PTS.	IMP. PTS.	LITERS
1951 Champion (10G)	1.50	1.25	0.71	2.60	2.16	1.23
1951 Comm. & L.C. (H)	2.40	2.00	1.14	3.40	2.83	1.61
1950 Champion (9G)	1.50	1.25	0.71	2.60	2.16	1.23
1950 Comm. & L.C. (17A)	2.40	2.00	1.14	3.40	2.83	1.61
2R5, 2R10, 2R6, 2R11	2.50	2.08	1.18	3.40	2.83	1.61
2R14, 2R15, 2R16A*	6.00	5.00	2.84	-	-	-
2R17A	6.75	5.60	3.17	-	-	-

* 4-Speed transmission, optional for 2R5, 2R6, 2R10, 2R11.

T TRUCK SERVICE Information



PISTON RINGS 245.6 CU. IN. ENGINE ("COMMANDER SIX")

Please record this article on page 107 of your 2R Series Trucks Shop Manual, page 143 of your 1950 Shop Manual, and on page 91 of your 1947 Shop Manual.

This article applies to all current model 2R Series trucks using the 245.6 cu. in. six cylinder, in-line (L-head) engine, and to all passenger cars, 1950 and before, using that engine.

Effective with Truck Engine Nos. 6R-6009 (2R6, 2R11, 2R14) and 4R-33814 (2R16A, 2R17A) a new type compression piston ring entered production. This ring has a 50° bevel on the inside, as compared to the 30° bevel formerly used. This change aids in controlling oil and blow-by, but does not affect the ring-to-cylinder wall pressure.

Effective with Truck Engine Nos. 6R-6022 (2R6, 2R11, 2R14) and 4R-33832 (2R16A, 2R17A), a new type of oil control ring entered production. This ring is changed so that an expander is used to give more uniform wall pressures. In addition, the taper has been removed from the face or cylinder wall contact surface of the ring so as to increase the life of the ring.

REAR AXLE AND REAR BRAKE ASSEMBLIES - 2R16A AND 2R17A MODEL TRUCKS

Please record this article on pages 30 and 17 of your 2R Series Trucks Shop Manual.

A change in the design of the banjo-type rear axle housing of 2R16A, 2R17A, and other model trucks for use in conjunction with the new FR2 rear brake assemblies was described in Supplement III to the 2R Series Trucks Shop Manual and details were given in Service Bulletin No. 251, page 4.

Due to conditions beyond our control, it was necessary to use a limited number of the old-type rear axle housing and Hi-Tork rear brake assemblies. There was no change in the front brake assemblies.

The serial numbers of the trucks on which the old type rear axle housing and rear brakes were installed are as follows:

Brake	Rear Axle Part No.	Serial Nos.
Std. Hi-Tork	679918	R16A-33001-R16A-33042
H.D. (15x4) Hi-Tork	679918	R16A-33042-R16A-33052
Std. (15x4) Hi-Tork	678349	R17A-22901-R17A-22920

Since the new-type and old-type parts are not interchangeable, it is important that replacement parts orders list the serial number of the truck.

INCREASED RING AND PINION GEAR LIFE -- 6.66-1 AXLES ON 2R16A TRUCKS

Please record this article on page 177 of your 2R Series Trucks Shop Manual.

Effective with Serial No. R16A-32717, new rear axle ring gear and pinion with improved tooth contour and contact area entered production of 2R16A model trucks with single speed, 6.66-1 rear axles.

To identify whether parts are of the new type or old, the following numbers, stamped on the flange end of the pinion gear, will be useful:

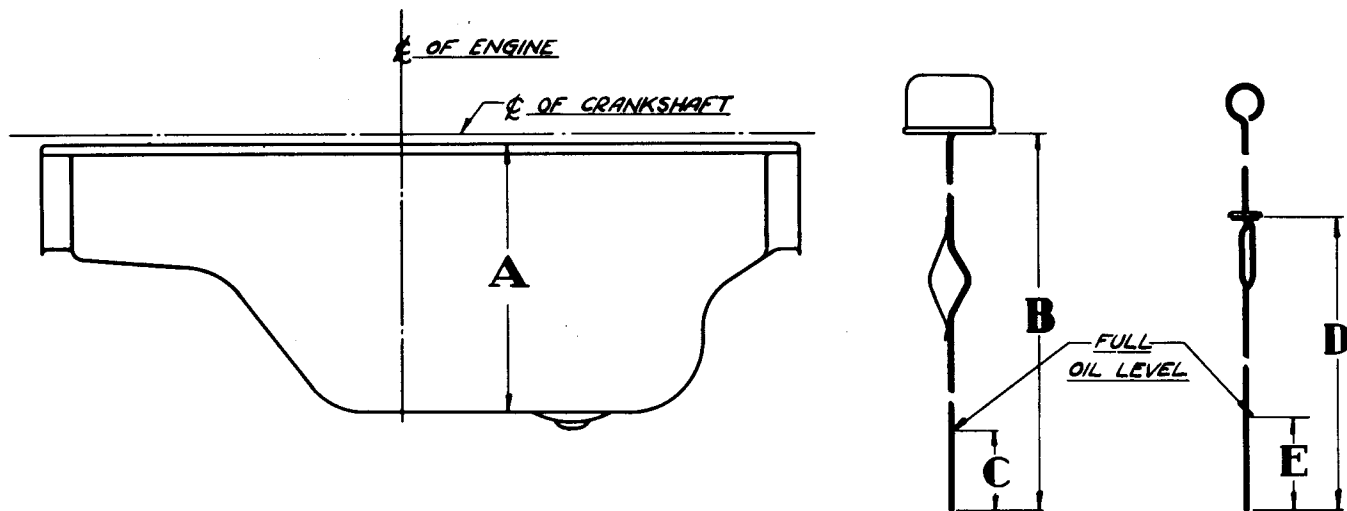
New type gear ---- 35370-1
Old type gear ---- 34506-7

The new parts are interchangeable with the old in matched sets. When present stocks of the old type gear are exhausted, only the new type matched ring and pinion gear sets will be furnished.

The part numbers of both types are listed below.

Part Number	Part Name
666171	Differential case with gear and pinion.
666172	Rear axle bevel drive gear and pinion (matched set)

OIL LEVEL GAGES FOR VARIOUS MODEL OIL PANS - M AND 2R SERIES



MODEL	OIL PAN	A	OIL LEVEL GAUGE	B	C	D	E
M5-M15-2R5-2R10-2R15	198824	7 ¹⁵ / ₆₄	512582	17 ³ / ₄	2 ⁷ / ₃₂		
M16-M17	199300	6 ³ / ₁₆	512848			8 ⁷ / ₁₆	2 ¹⁵ / ₁₆
2R5-2R10-2R15	525099	7 ⁵⁵ / ₆₄	678770	17 ³ / ₄	1 ⁷ / ₈		
2R5-2R10-2R15	529264	8 ¹⁵ / ₆₄	680204	17 ³ / ₄	2 ³ / ₃₂		
* M16-M17-2R16-2R17	522747	6 ⁷ / ₁₆	520225			8 ⁷ / ₁₆	2 ¹¹ / ₁₆
* 2R16A-2R17A	524114	6 ⁷ / ₁₆	523184			10 ¹ / ₃₂	3 ⁷ / ₃₂
2R6-2R11-2R14-2R16A-2R17A	525160	6 ²⁵ / ₃₂	525351			10 ¹³ / ₃₂	3 ¹⁹ / ₃₂

SEE NOTE

* NOTE:- WHEN "A" DIMENSION MEASURES 6⁷/₈ THE OIL LEVEL GAUGE USED MUST BE DETERMINED BY THE CYLINDER BLOCK NUMBER WHICH IS CAST ON THE LEFT SIDE OF THE ENGINE ABOVE THE GAUGE HOLE. FOR CYLINDER BLOCK *199193 USE GAUGE *520225.-FOR CYLINDER BLOCK *523140 USE GAUGE *523184.

Please record this article on page 107 of your 2R Series Trucks Shop Manual.

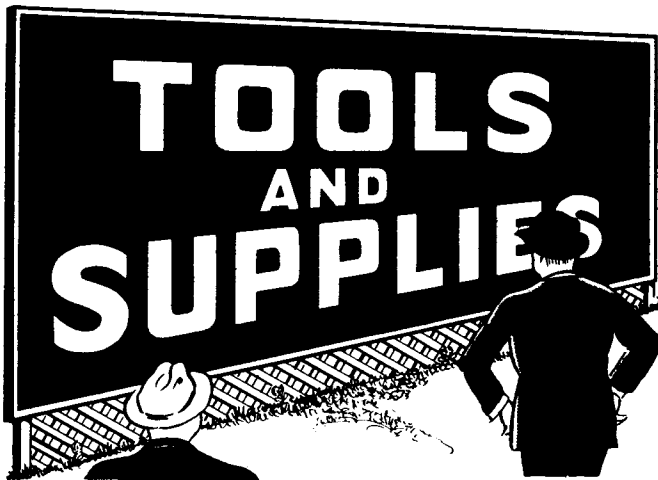
The above drawing, table, and footnote cancel and supersede similar information pertaining to the oil level gages and oil pans of various M Series and 2R Series trucks given in Service Bulletin No. 236, page 6.

From time to time, as truck models change, dimensions of the engine oil pan and also of the oil level gage are changed. This makes it possible in service replacement of the pan or the gage to have the wrong gage for the pan on the truck. As a result, inaccurate oil level readings may be taken.

The accompanying illustration and chart show how measurements of the gage and pan indicate whether the correct gage is being used. Likewise, the chart should be consulted whenever

there is any doubt as to which pan or gage is desired in any individual installation.

When taking measurements to check oil pan depth ("A" in the illustration) hold a straight edge flat against the bottom of the pan and extending out beyond one side of the pan. Hold a scale (graduated to 64ths of an inch) against the side of the pan with the end of the scale snug against the underside of the mounting flange. With the scale perpendicular to the straight edge, read the dimension between the straight edge and the underside of the mounting flange. Locate this figure under Column A in the chart. On the same line will be found the correct part number of the pan as well as the part number of the oil level gage which should be used in conjunction with that pan. Conversely, taking measurements B-C or D-E, depending upon the type of gage used, will tell you the part number and depth of the correct oil pan for that gage.



KERRICK KLEANER DESCRIBED

Seven models of the Kerrick Kleaner are described in the enclosed folder furnished by Clayton Manufacturing Company, Box 550, El Monte, California.

The Kerrick Kleaner is a steam cleaner, using either gas or oil to raise steam. It is claimed that in less than one hour the dirtiest, travel-stained and grease-burdened car can be thoroughly cleaned.

Advantages to dealers are not only in cleaning customers' cars on request or preliminary to performing mechanical services, but steam cleaning also is valuable in reconditioning work on used cars being made ready for sale.

In addition, the steam cleaner can be used to clean parts for repair, boil out radiators, keep walls, floors, and equipment in the service shop spotlessly clean.

A postage-free card is furnished on the back page of the booklet for the convenience of dealers desiring free demonstration of a Kerrick Kleaner.

NOTE.--Export dealers may order from The Studebaker Corporation, Export Division.

PITMAN ARM SHAFT BUSHING REMOVER AND REPLACER FOR SAGINAW STEERING GEAR EQUIPPED CARS

Please record this article on the Service Bulletin reference page at the end of the Front Suspension and Steering section of your 1951 Passenger Car Shop Manual.

A bushing and bearing remover and replacer for use in the service of the Saginaw steering gear on some 1951 Champion (10G) models, is

available from the Kent-Moore Organization, 485 West Milwaukee Avenue, Detroit 2, Michigan. The price of this tool is approximately \$5.00.

When ordering, specify Tool No. J-1614, Pitman Arm Bushing Remover and Replacer.

NOTE.--Export dealers may order from The Studebaker Corporation, Export Division.

SECOND PRESSURE GAGE SPEEDS SERVICE OF AUTOMATIC DRIVE CARS

A second pressure gage and fitting set, Tool No. J-4270, is recommended as a time saver in the service department. The second gage can be used for taking pressure tests of the torque converter and direct drive clutch during road tests. A second gage also will permit two cars to be pressure tested at the same time in the shop, thus reducing unapplied shop time due to waiting for a gage.

The pressure gage and fittings, Tool No. J-4270, can be purchased direct from the Kent-Moore Organization, Inc., 485 West Milwaukee Avenue, Detroit 2, Michigan.

NOTE.--Export dealers may order from The Studebaker Corporation, Export Division.

BARRETT BRAKE DOKTERS

Mailed with this issue of the Service Bulletin is a copy of a catalogue insert sheet describing four models of Barrett Brake Dokters. This equipment covers the entire service of brake lining grinding on all passenger cars, large trucks, and buses.

The Brake Dokter consists of two pieces of equipment: one is an inside micrometer that is centered in the brake drum hub to measure the brake drum diameter; the second is a grinding tool to which the micrometer measurement is transferred. Using this setting as a base point, the vehicle manufacturer's recommended lining-to-drum clearance is then set on a gage on the grinder. This grinder is affixed to the wheel spindle or axle and, by means of an electric motor, provides accurate circle grinding of the linings exactly to the specified clearance.

Brake Dokters are manufactured by the Barrett Equipment Company of St. Louis, Missouri, but are sold through your local jobber. See him for further details regarding models and prices.

NOTE.--Export dealers may order from The Studebaker Corporation, Export Division.